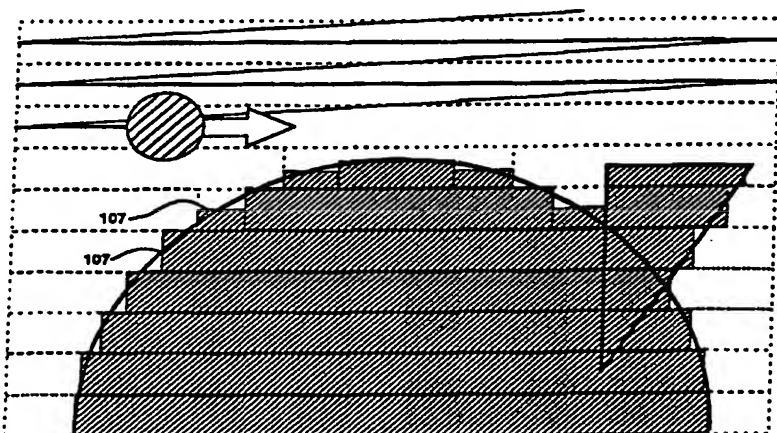


**PCT**WORLD INTELLECTUAL PROPERTY ORGANIZATION  
International Bureau

## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 6 : <b>G06K 15/12, G03F 7/20, G06T 11/20, H04N 1/04</b>		<b>A3</b>	(11) International Publication Number: <b>WO 98/38597</b> (43) International Publication Date: <b>3 September 1998 (03.09.98)</b>
(21) International Application Number: <b>PCT/SE98/00347</b> (22) International Filing Date: <b>26 February 1998 (26.02.98)</b> (30) Priority Data: <b>9700742-1</b> <b>28 February 1997 (28.02.97)</b> <b>SE</b> (71) Applicant (for all designated States except US): <b>MICRONIC LASER SYSTEMS AB [SE/SE]; P.O. Box 3141, S-183 03 Täby (SE).</b> (72) Inventor; and (75) Inventor/Applicant (for US only): <b>THURÉN, Anders [SE/SE]; Torgnyvägen 21, S-183 72 Täby (SE).</b> (74) Agent: <b>AWAPATENT AB; P.O. Box 11394, S-404 28 Göteborg (SE).</b>			(81) Designated States: <b>AL, AM, AT, AT (Utility model), AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, CZ (Utility model), DE, DE (Utility model), DK, DK (Utility model), EE, EE (Utility model), ES, FI, FI (Utility model), GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SK (Utility model), SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).</b>  <b>Published</b> <i>With international search report.</i>  (88) Date of publication of the international search report: <b>7 January 1999 (07.01.99)</b>
(54) Title: <b>DATA-CONVERSION METHOD FOR A MULTIBEAM LASER WRITER FOR VERY COMPLEX MICROLITHO- GRAPHIC PATTERNS</b>			
			
(57) Abstract <p>The invention relates to microlithography, in particular to the writing of photomasks for computer displays, microelectronic devices, and precision photoetching. It is also applicable to wafers, optical devices and a variety of electronic interconnection structures such as multichip modules. Other applications are possible, such as printing and graphics, as well as laser projection displays. In the present invention the data conversion is divided in two steps: first cutting the geometries in scan lines and simplifying them, and then finishing the conversion of the scan lines at the point of demand, i.e. in a beam processor in the driving electronics for each beam. The idea is to make as much as possible of the conversion at the latest possible point, i.e. at the beams. What is needed at an earlier stage is to separate the data for different beams and distribute them, and to simplify the data enough to make sure that the beam processors can always handle the data flow.</p>			

**FOR THE PURPOSES OF INFORMATION ONLY**

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
AM	Armenia	FI	Finland	LT	Lithuania	SK	Slovakia
AT	Austria	FR	France	LU	Luxembourg	SN	Senegal
AU	Australia	GA	Gabon	LV	Latvia	SZ	Swaziland
AZ	Azerbaijan	GB	United Kingdom	MC	Monaco	TD	Chad
BA	Bosnia and Herzegovina	GE	Georgia	MD	Republic of Moldova	TG	Togo
BB	Barbados	GH	Ghana	MG	Madagascar	TJ	Tajikistan
BE	Belgium	GN	Guinea	MK	The former Yugoslav	TM	Turkmenistan
BF	Burkina Faso	GR	Greece		Republic of Macedonia	TR	Turkey
BG	Bulgaria	HU	Hungary	ML	Mali	TT	Trinidad and Tobago
BJ	Benin	IE	Ireland	MN	Mongolia	UA	Ukraine
BR	Brazil	IL	Israel	MR	Mauritania	UG	Uganda
BY	Belarus	IS	Iceland	MW	Malawi	US	United States of America
CA	Canada	IT	Italy	MX	Mexico	UZ	Uzbekistan
CF	Central African Republic	JP	Japan	NE	Niger	VN	Viet Nam
CG	Congo	KE	Kenya	NL	Netherlands	YU	Yugoslavia
CH	Switzerland	KG	Kyrgyzstan	NO	Norway	ZW	Zimbabwe
CI	Côte d'Ivoire	KP	Democratic People's	NZ	New Zealand		
CM	Cameroon		Republic of Korea	PL	Poland		
CN	China	KR	Republic of Korea	PT	Portugal		
CU	Cuba	KZ	Kazakstan	RO	Romania		
CZ	Czech Republic	LC	Saint Lucia	RU	Russian Federation		
DE	Germany	LI	Liechtenstein	SD	Sudan		
DK	Denmark	LK	Sri Lanka	SE	Sweden		
EE	Estonia	LR	Liberia	SG	Singapore		

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/SE 98/00347

<b>A. CLASSIFICATION OF SUBJECT MATTER</b>		
IPC6: G06K 15/12, G03F 7/20, G06T 11/20, H04N 1/04 According to International Patent Classification (IPC) or to both national classification and IPC		
<b>B. FIELDS SEARCHED</b>		
Minimum documentation searched (classification system followed by classification symbols)		
IPC6: G06K, G03F, G06T, H04N		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
SE,DK,FI,NO classes as above		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)		
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 0467076 A2 (MICRONIC LASER SYSTEMS AB), 22 January 1992 (22.01.92)	1-14
	--	
A	US 5533170 A (ROBIN L. TEITZEL ET AL), 2 July 1996 (02.07.96)	1-14
	-- -----	
<input type="checkbox"/> Further documents are listed in the continuation of Box C. <input checked="" type="checkbox"/> See patent family annex.		
* Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family		
Date of the actual completion of the international search		Date of mailing of the international search report
12 August 1998		14 -08- 1998
Name and mailing address of the ISA/ Swedish Patent Office Box 5055, S-102 42 STOCKHOLM Facsimile No. +46 8 666 02 86		Authorized officer  Jan Silfverling Telephone No. +46 8 782 25 00

**INTERNATIONAL SEARCH REPORT**  
Information on patent family members

27/07/98

International application No.

PCT/SE 98/00347

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 0467076 A2	22/01/92	DE 4022732 A	20/02/92
		DE 59107376 D	00/00/00
		JP 6083023 A	25/03/94
-----			
US 5533170 A	02/07/96	AU 5410294 A	24/05/94
		CA 2148121 A	11/05/94
		EP 0664033 A	26/07/95
		JP 8505003 T	28/05/96
		WO 9410633 A	11/05/94
-----			